

- 3.C.4.c (2) Design Requirements. Flame barriers are intended to prevent passage of flames outside a tank vent into the tank. They must be designed with openings too small to allow flame passage, but sufficiently large not to obstruct vapor flow. These devices should normally be mounted at the opening of the vent or vent stack. Barriers installed in the vent away from the opening may not be effective since the flame front will rapidly accelerate once it enters the pipe. The safety of installations with screens or arresters away from the opening should be demonstrated by suitable testing. Flame barriers should be durable, corrosion resistant, and have a low susceptibility to fouling. Careful periodic inspection and cleaning are very important. Screen type elements are only effective if they are undamaged by punctures or tears in the wire mesh, and there are no holes or gaps around the periphery larger than the openings specified for the 20x20 or 30x30 mesh screen.

d. Navigation Equipment.

- (1) Design Requirements. The 2000 SOLAS (Safety of Life at Sea) amendments came into force on 01 July 2002. Regulations V/18.1 and 18.5 of these amendments require navigation equipment installed on ships to be type approved by the Administration. The regulations also call for the Administration to require manufacturers to produce approved navigation equipment under a quality system audited by a competent authority. Approval of Navigation Equipment for Ships, COMDTPUB P16700.4, NVIC 8-01 CH-1, describes the standards, regulations and processes for the approval of navigation equipment.

e. Resiliently Seated Valves.

- (1) Introduction. RSV's are valves that stop the passage of flow using resilient nonmetallic material instead of a metal-to-metal seat. Valves of this type must meet the specifications of 46 CFR 56.20-15. There are three categories, Positive shutoff, Category A, and Category B.
- (2) Acceptable Locations. Positive shutoff valves are required in piping subject to an internal head pressure from a tank containing oil and must be located at the tank; see 46 CFR 56.50-60(d). Category A valves may be used in any location except where positive shutoff valves are required. Category A valves are required in the following locations:
- (a) Valves at vital piping system manifolds;
 - (b) Isolation valves in cross-connects between two piping systems, at least one of which is a vital system, where failure of the valve in a fire would prevent the vital system(s) from functioning as designed; or
 - (c) Valves providing closure for any opening in the shell of the vessel.

Category B valves are not required to be tested and may be used in any location except where a Category A or positive shutoff valve is required.